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Rule Of Land Potential For Paddy Use Rough Set Method

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Abstrak

Kabupaten Blitar menjadi salah satu kabupaten di Jawa Timur dengan keadaan tanah sebagian besar merupakan tanah vulkanik yang baik dimanfaatkan sebagai lahan pertanian. Diperlukan adanya sebuah cara untuk mengetahui kemungkinan suatu wilayah berpotensi komoditas padi. Sehingga diharapkan dengan penelitian ini dapat membantu pemerintah Kabupaten Blitar agar mampu memaksimalkan jumlah produksi komoditas padi di Kabupaten Blitar dengan banyaknya petani yang ada. Metode Rough Set mampu menghasilkan informasi berupa pola aturan (rule) yang dapat menentukan wilayah potensi komoditas padi di Kabupaten Blitar dengan menggunakan faktor luas panen, jumlah produksi, dan jumlah petani per-Kecamatan. Penelitian ini, tidak hanya dilakukan secara analitik tetapi juga menggunakan bantuan dari software Rosetta untuk menguji analisis data secara analitik menggunakan metode Rough Set. Hasil penelitian ini berupa rule sebanyak 38 rule yang dapat menjelaskan kemungkinan wilayah berdasarkan 3 atribut keputusan yaitu: berpotensi, kurang berpotensi, dan tidak berpotensi. Untuk wilayah yang memiliki kemungkinan besar berpotensi komoditas padi berdasarkan rule yang sudah terbentuk adalah wilayah yang memiliki luas panen yang luas, jumlah produksi yang banyak, dan jumlah petani yang sedikit.

***Kata kunci**—Kabupaten Blitar, komoditas padi, Rough Set, rule, Software Rosetta*

Abstract

Blitar district has become one of the many cities in Java the land situation is largely a good soil of vuikanik to be used as farmland. Requires a way of knowing where a region might have a potential paddy commodity. It is hoped that the government of blitar will be able to make the best use of the number of paddy commodities produced in blitar district with the many farmers available. A rough set is able to produce information with a rule pattern (rule) which can determine the potential areas for paddy commodities in Blitar district by using factors of harvested area, production amount, and number of farmers per sub-district. This research is not only done analytically but also help from Rosetta's software to test analytic data analysis use rough set. The result of this study is rule as many as 38 rule that can explain the possibility of stake based on the 3 decision attributes: potential, low potential, and not potential. For those areas there is a good chance paddy commodity potential area based on the rules that have been formed is area have a large crop, a large amount of paddy produced, and a small number of farmers.

***Keywords**—Blitar District, paddy comodity, Rough Set, rule, Rosetta's software*

1. INTRODUCTION

Blitar was the region next to the island of Java and was one of the most complex patents in the east Java province. The location that was in under the volcanic foot hills of Kelud

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Mountaint made most of the region in the Blitar district imbued with volcanic soil, containing ash volcanic eruptions, sand and napal (limestone mixed with clay). The soil is generally a yellowish gray, salty and sensitive to erosion. This latter land is called regosol, which can be used to grow paddy, sugarcane, tobacco, and vegetable crops, irrigation. It's good and effective because it's channeled by the Brantas and Leso rivers. Then, utilized by two DAMS (Wlingi Raya and Serut), which encourage agriculture to produce paddy and corn.

On the other hand, the country's agricultural sector, which has become a priority for the region, has been covered with food and holticultura, forestry and agriculture. On the other hand, there has been a heavy trend in the global growth reaching 47%. [1] According to the statistical office (BPS) East Java (2018), employees in the agricultural sector at blitar have a percentage of 44.09% or 275,897 of the population of 625,720. From data BPS the agricultural sector there is a strong market of most people in Blitar. Increased economic growth can, to some extent, influence inequality between regional development and discrimination against rural areas and the agricultural sector[2]. Equitable distribution of the agricultural sector in the future is very necessary for the distribution of community specially food necessity.

The paddy (Oryza Sativa L.) is a plant that comes from two continents that is Asia and tropical West Africa and subtropical. The cultivation of the own paddy had begun in Zhejiang, China [2] in 3,000 B.C. Paddy is also a key food item in Indonesia, and it has become a strategic commodity. Blitar district is a potential area of paddy commodity, due in part the great region of blitar district had fertile soil so it was good for her planting paddy. The latest paddy commodity in the blitar district will need blitar to help analyze the potential areas of paddy commodity.

Predictions or forecasting are among the applications of mathematics in daily life, one of the forecasting methods of rough set [3]. Rough set is one of the methods in the mathematics of dealing with the vang's ambiguity introduced to mixing uncertainty and misinformation. It can produce new information there is a rule pattern (rule) that can be used in the development of a potential area of paddy commodity in the blitar district. The purpose of the rough set analysis is to get a brief rule estimate of some known factors [4]. So using rough set may help predict the potential areas of paddy commodity in the blitar district by using crop yields, agricultural areas, and many farmers within a region.

Previous research on the implementation of the rough set method was carried out by Ratri Arijaya, et al. in 2016 with the title "Implementasi Metode *Rough Set* dan *Certainty Factor* untuk Deteksi dini Penyakit Menular Seksual (Studi Kasus: Puskesmas Dinoyo Kota Malang)" [5]. The rough set method has also been used to predict drug supplies at Haji Adam Malik General Hospital Medan by Tifanny Anggraini and Melda Panjaitan in 2018 [6]. In addition, the rough set method can also be used in analyzing the performance of lecturers as has been done by Dedy Hartama and Hartono in their research entitled "Analisis Kinerja Dosen STMIK IBBI dengan Menggunakan Metode *Rough Set*" in 2016 [7]. M.Ramdani Raharjo and Agus Perdana Windarto also conducted research on rough sets in 2021 with the title "Penerapan *Machine Learning* dengan Konsep Data Mining *Rough Set* (Prediksi Tingkat Pemahaman Mahasiswa terhadap Matakuliah)" [8]. M.A. Sembiring and N.Manurung in 2018 also conducted a research entitled "Integrasi *Software* Rosetta Dalam Menganalisa Keuntunga menggunakan Metode *Rough Set*" [9].

Based on the above background, the purpose of this study is to determine the rules on the potential areas for paddy commodities in Blitar Regency by using data on the quantity production, harvest area, and the number of farmers.

2. METHODS

In determining the region of potential paddy commodity existing in Blitar district there will be used one of the methods in data mining which is rough set.

2.1 Data Mining

[10] Data mining called Knowlegde Discovery in Database (KDD) it is a vang activity associated with data collection, historical data use to find knowledge, information,

regularity, pattern or relationship in large data. Output in data mining alternative in decision-making in the future. Data mining is not a standing field of science on my own, but very connected with other sciences like databases, statistic, information searching, dan artificial intelligent. Data mining are grouped by function and purpose, which is as follows.

1. Description, intended to find/identify a recurring pattern and turn that pattern into a rule that can be used to facilitate an activity. One of the algorithms in the description is the apriori algorithm.
2. Classification, grouping on classification based on the relationship between criterion variable with target variable. Algorithms that run deep clarification is a Cart, ID3, C4.5, J48, C5.0, *nearest neighboor*, *naïve bayes*, etc.
3. Predictions, which are one of the data mining that is often used to predict the future over data before. The algorithm is *Rough Set*, Chart, ID3, C4.5, J48, dan C5.0.
4. Estimates, in classifications it is virtually classified. The difference lies in a grouping form, where the numerical cluster estimates. The algorithm is linear regression simple, linear regression, etcetera.
5. Clustering, in classifying it as being similar or homogeneous to the data form of observations, data records, or classes and objects of a similar nature. In numeration differs from classification by not using variable decisions. The algorithm included in the library is the k-Means, K-medoids, K-Nears Neighboo, etcetera.
6. Associations, are groups, himpuan, unity, or fellowship. Data-mining processes are attribute searches that appear or always surface at the same time. Great opportunities for attribute to arise simultaneously are measured by reducing confidence value. The algorithm included in the association is association rule.

2.2 Rough set

A rough set is a mathematical technique developed by Pawlack in 1980 [11]. Rough set one of those data-mining techniques Used for Uncertainty issues, Imprecision and Vagueness in application Artificial Intelligence (AI). Rough set is an efficient technique for the knowledge discovery in database (KDD) inside stage of process and data mining [12].

The purpose of a rough analysis set is to get a short rule estimate from a table Results from a rough set analyst can be used in the process of data mining and knowledge discovery [11]. Here's a hard set set rule:

Rough sets offers two forms of data representation information System (IS) dan Decision System (DS) [13].

1. Information system

   Information system (IS) is a chart composed of a line that represents data and columns that represent attributes or variable from data. Information system on data mining known as dataset name. Information Sistem is Information Sistem (IS) is a pair $IS = \{U, A\}$, where $U = \{E_1, E_2, \dots, E_m\}$ dan $A = \{A_1, A_2, \dots, A_n\}$ are a bunch examples and sequential patterns.
2. Decision System

   Decision system is information system with additional attributes which are called decision attribute, in data mining, it is known as the class or target. Decision system represents the result of a known classification. Decision system is a function that describes information system, where : $DS = \{U, (A, C)\}$, where $U = \{E_1, E_2, \dots, E_m\}$ and $A = \{A_1, A_2, \dots, A_n\}$ and $C = \{C_1, C_2, \dots, C_p\}$. Where is the U object and A Attribute Condition while C Decision Attribute.

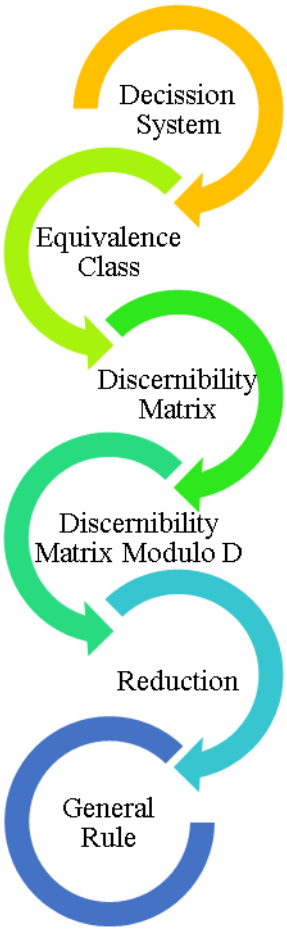
The research method used by researchers in carrying out research these are as follows:

1. Literature Study Method

   Study literature is collecting data and information from the literature by reading and studying books, literature, articles, as well as materials of a theoretical nature, learning obtained in lectures or general, as well as other sources of information related to research.
2. Data Collection Method

Data collection in this study used secondary data. Secondary data was obtained from the Department of Agriculture and Food of Blitar Regency. The data collected is compiled to get clear data results in the form of numbers.

3. Data Processing Method
   The data processing method uses the rough set method to determine the rule in determining the potential area for paddy commodities in Kab. Blitar. The steps taken in data processing are as follows:



Picture 1 Flow Chart

a. Decission System
   Decision system is information system with an additional attribute called a decision attribute, in data mining is known as class name or target. This attribute represents the results of a known classification.
b. Equivalance Class
   Grouping the same objects allows the same conditions/criteria means the same data by criteria does not arise more than 1 (one) time, or only 1 (1) times, so that there is less data..
c. Discerbility Matrix
   The search process distinguishes value attributes from conditions/criteria between data on Equivalence Classes (EC). The search process has formed data. Equiequiments Class (EC), condition/criterion attributes changed in form variables such as A.B.C or each other. Data on Equivalence Classes (EC). Converted to a matrix with the same number of columns and lines as the numbers in the Equivalence Class (EC). Find the difference in attribute values between data in the Equivalence Class (EC), and write different attributes to variable shapes.

d. Discerbility Matrix Modulo D
   Discerbility Matrix Modulo D is a continuation of Discerbility Matrix, if Discerbility Matrix value the same criteria/condition attributes then its value is expunged, then the value of those attributes is erased, only the disparity is retained.
e. Ruduction
   Variable values are not eliminated in the Discerbility Matrix Modulo D process, being a mathematical equation with so many variables. To simplify tension uses the Prime Implicant function Boolean law.
f. General Rule
   General Rule is a process rule based on values variables derived from the simplification of mathematical equations with Boolean law. Building rule of vaitu by adjusting the data on the Equivalence Class (EC), variable atribut kriteria/kondisi the variable attributes of the criteria/conditions the simplification results have been directly linked to Decision Attribute.

The study uses software help to test the truth from the rule generated on data analysis using rough set. Test rules on this study using Rosetta's software.

3. RESULTS AND DISCUSSION

In rough sets, a set is represented as a table. Where the rows in the table represent objects and columns represent attributes of those objects.Attributes of the objects. The chart called information svstem vang can be described as:

$S = (U, A)$

where U are an infinite set of infinite objects called by universe and A are a set of infinite infinite attributes from which:

$a: U \rightarrow Va$

for each $a \in A$. Set called value set from a. This is information system paddy commodity data:

Table 1 Information System

No	District	Harvest Area	Quantity Production	Number of Farmers
1	Bakung	1,823	8,715	5,101
2	Wonotirto	1,435	6,797	7,153
3	Panggungrejo	1,318	6,663	11,157
4	Wates	1,563	7,819	7,579
5	Binangun	196	1,188	9,844
6	Sutojayan	2,489	17,413	4,708
7	Kademangan	3,092	17,622	7,254
8	Kanigoro	1,979	13,880	4,183
9	Talun	1,990	14,229	5,502
10	Selopuro	3,733	24,958	3,643
11	Kesamben	4,710	33,544	4,504
12	Selorejo	2,991	21,342	3,942
13	Doko	4,085	27,500	4,503
14	Wlingi	4,143	28,988	2,834
15	Gandusari	3,811	26,553	5,253
16	Garum	2,892	19,419	4,409
17	Nglegok	1,845	13,084	3,961
18	Sanankulon	1,422	10,349	3,078
19	Ponggok	1,236	7,756	5,558
20	Srengat	1,654	10,833	3,964
21	Wonodadi	1,913	12,710	3,059
22	Udanawu	1,184	8,854	4,148

In the table above U is (Bakung, Wonotirto,Panggungrejo, Wates, Binangun, Sutojayan, Kanigoro, Talun, Selopuro, Kesamben, Selorejo, Doko, Wlingi, Gandusari, Garum, Nglegok, Sanankulon, Ponggok, Srengat, Wonodadi, Udanawu) is a set of subdistricts in blitar district. While A is {harvest area, quantity production, number of farmers} which is the set of potential commodity attributes.

In the use of the information system, there is an outcome of known classifications called decision attributes. Information system that is called the decision system. The decision system can be described as:

$S = (U, A \cup \{d\})$

Where $d \neq A$ is a decision attribute. The decision table can be seen in the chart:

Table 2 Decision System

No	District	Harvest Area	Quantity Production	Number of Farmers	Potential
1	Bakung	Moderate	Small	Moderate	Not potential
2	Wonotirto	Narrow	Small	High	Not potential
3	Panggungrejo	Narrow	Small	High	Lack of potential
4	Wates	Narrow	Small	High	Not potential
5	Binangun	Narrow	Small	High	Not potential
6	Sutojayan	Moderate	Moderate	Moderate	Lack of potential
7	Kademangan	Large	Moderate	High	Lack of potential
8	Kanigoro	Moderate	Moderate	Moderate	Lack of potential
9	Talun	Moderate	Moderate	Moderate	Lack of potential
10	Selopuro	Large	Great	Small	Potential
11	Kesamben	Large	Great	Moderate	Potential
12	Selorejo	Moderate	Great	Moderate	Lack of potential
13	Doko	Large	Great	Moderate	Potential
14	Wlingi	Large	Great	Small	Potential
15	Gandusari	Large	Great	Moderate	Potential
16	Garum	Moderate	Moderate	Moderate	Lack of potential
17	Nglegok	Moderate	Moderate	Moderate	Lack of potential
18	Sanankulon	Narrow	Small	Small	Not potential
19	Ponggok	Narrow	Small	Moderate	Not potential
20	Srengat	Narrow	Small	Moderate	Not potential
21	Wonodadi	Moderate	Moderate	Small	Lack of potential
22	Udanawu	Narrow	Small	Moderate	Not potential

In the table, attribute A has expanded attributes, namely the Potential attribute which is decision attribute of the decision system. Potential attribute have three decision that is Potential, Lack of potential, and Potential. The purpose of the attribute decision if Potential means the area has high potential in producing paddy, Less Potential means the area has lack of potential in producing paddy, and No Potential means the area has no potential in producing paddy.

Next determine equivalence class. Equivalence class is same objects category for attribute $A \in (U, A)$. So the decision system table obtained equivalence class {EC1-EC11} as following the table:

Table 3 Equivalence Class

Class	Harvest Area	Quantity Production	Number of Farmers	Decision
EC1	Moderate	Small	Moderate	Not potential
EC2	Narrow	Small	High	Not potential
EC3	Narrow	Small	High	Lack of potential
EC4	Moderate	Moderate	Moderate	Lack of potential
EC5	Large	Moderate	High	Lack of potential

EC6	Large	Great	Small	Potential
EC7	Large	Great	Moderate	Potential
EC8	Moderate	Great	Moderate	Lack of potential
EC9	Narrow	Small	Small	Not potential
EC10	Narrow	Small	Moderate	Not potential
EC11	Moderate	Moderate	Small	Lack of potential

From the table above we specify discernibiity matrix, where that data is have the same criteria and be written down only once. So that Discernibility Matrix gets like on the following table:

Table 4 Discernibilty Matrix

Objek	EC1	EC2	EC3	EC4	EC5	EC6	EC7	EC8	EC9	EC10	EC11
EC1	X	AC	AC	B	ABC	ABC	AB	B	AC	A	BC
EC2	AC	X	X	ABC	AB	ABC	ABC	ABC	C	C	ABC
EC3	AC	X	X	ABC	AB	ABC	ABC	ABC	C	C	ABC
EC4	B	ABC	ABC	X	AC	ABC	AB	B	ABC	AB	C
EC5	ABC	AB	AB	AC	X	BC	BC	ABC	ABC	ABC	AC
EC6	ABC	ABC	ABC	ABC	BC	X	C	AC	AB	ABC	AB
EC7	AB	ABC	ABC	AB	BC	C	X	A	ABC	AB	ABC
EC8	B	ABC	ABC	B	ABC	AC	A	X	ABC	AB	BC
EC9	AC	C	C	ABC	ABC	AB	ABC	ABC	X	C	AB
EC10	A	C	C	AB	ABC	ABC	AB	AB	C	X	ABC
EC11	BC	ABC	ABC	C	AC	AB	ABC	BC	AB	ABC	X

The matrix value of wisdom is obtained by comparing each attribute data conditions in the Equivalence Class (EC), if there is a difference in it then the writing on the table by entering variables, while if there is no difference then the writing uses (X), this stage will produce a new table shape which then processes dicernibility matriks modulo D.

Table 5 Discernibilty Matrix Modulo D

Objek	EC1	EC2	EC3	EC4	EC5	EC6	EC7	EC8	EC9	EC10	EC11
EC1	X	X	AC	B	ABC	ABC	AB	B	X	X	BC
EC2	X	X	X	ABC	AB	ABC	ABC	ABC	X	X	ABC
EC3	AC	X	X	X	X	ABC	ABC	X	C	C	X
EC4	B	ABC	X	X	X	ABC	AB	X	ABC	AB	X
EC5	ABC	AB	X	X	X	BC	BC	X	ABC	ABC	X
EC6	ABC	ABC	ABC	ABC	BC	X	X	AC	AB	ABC	AB
EC7	AB	ABC	ABC	AB	BC	X	X	A	ABC	AB	ABC
EC8	B	ABC	X	X	X	AC	A	X	ABC	AB	X
EC9	X	X	C	ABC	ABC	AB	ABC	ABC	X	X	AB
EC10	X	X	C	AB	ABC	ABC	AB	AB	X	X	ABC
EC11	BC	ABC	X	X	X	AB	ABC	X	AB	ABC	X

At this stage continues its existing comparisons on the discenibility matrix tables by adding its comparative value comparing decision value (decision attribute). Workmanship on this stage is the same as the craftsmanship at the discernibility matrix level that is by marking (x) when there is the same decision attribute, and does not mark it (is not removed) when there are no attributes same decision.

Results obtained at the discernibility matrix modulo D akam matrix are used for manufacturing in the reduction stage.

Table 6 Reduct

CLASS	CNF OF FUNCTION BOOLEAN	REDUCTOIN

EC1	(A v C) ^ (B) ^ (A v B v C) ^ (A v B v C) ^ (A v B) ^ (B) ^ (B v C)	{AB, BC}
EC2	(A v B v C) ^ (A v B) ^ (A v B v C) ^ (A v B v C) ^ (A v B v C) ^ (A v B v C)	{A, AB, AC, B, BC}
EC3	(A v C) ^ (A v B v C) ^ (A v B v C) ^ (C) ^ (C)	{AC, BC}
EC4	(B) ^ (A v B v C) ^ (A v B v C) ^ (A v B) ^ (A v B V C) ^ (A v B)	{AB, B}
EC5	(A v B v C) ^ (A v B) ^ (B v C) ^ (B v C) ^ (A v B v C) ^ (A v B v C)	{B, AC, AB, BC, ABC}
EC6	(A v B v C) ^ (A v B v C) ^ (A v B v C) ^ (A v B v C) ^ (B v C) ^ (A v C) ^ (A v B) ^ (A v B v C) ^ (A v B)	{A, AB, ABC}
EC7	(A v B) ^ (A v B v C) ^ (A v B v C) ^ (A v B) ^ (B v C) ^ (A) ^ (A v B v C) ^ (A v B) ^ (A v B v C)	{ABC, AC, AB}
EC8	(B) ^ (A v B v C) ^ (A v C) ^ (A) ^ (A v B v C) ^ (A v B)	{AB}
EC9	(C) ^ (A v B v C) ^ (A v B v C) ^ (A v B) ^ (A v B v C) ^ (A v B v C) ^ (A v B)	{ABC, AC, BC}
EC10	(C) ^ (A v B) ^ (A v B v C) ^ (A v B v C) ^ (A v B) ^ (A v B) ^ (A v B v C)	{ABC, AC, BC}
EC11	(B v C) ^ (A v B v C) ^ (A v B) ^ (A v B v C) ^ (A v B) ^ (A v B v C)	{B, AC}

The variable value of discernibility matrix modulo dis altered into a common form. The form of an equation that contains a large number of variables needs to be simplified, in simplifying the mathematical equation using prime implicant function Boolean law. The end result of the reduction is a smaller variable, followed by numbering variable variables with predetermined attributes.

After obtaining reduction, conclusions are drawn in the form of rule. Rule based on the variables of the reduction process and is linked with decission attributes by adjusting the table equivalence class. Where:

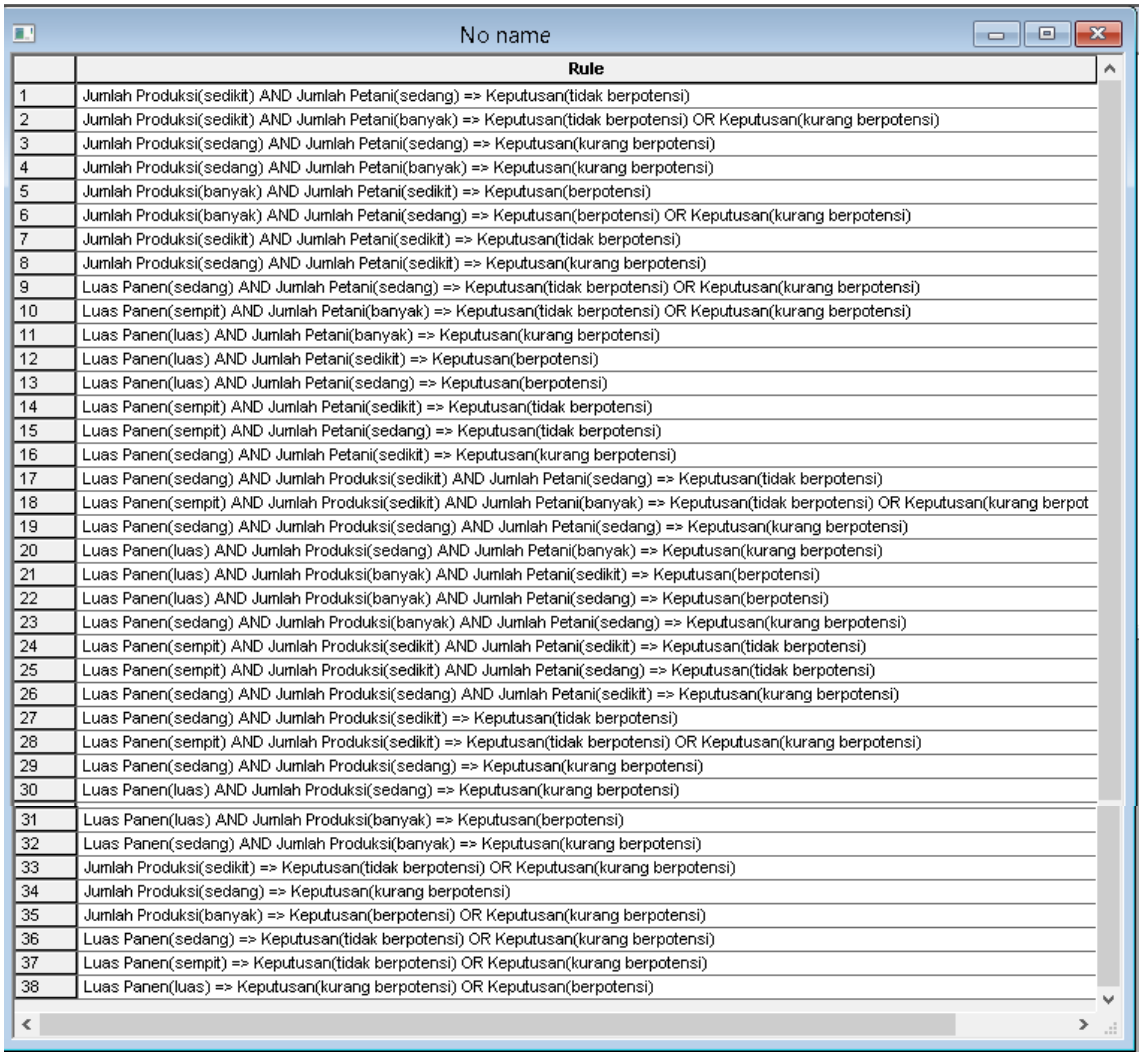
A = Vast Paddy Harvest
B = Amount of Paddy Produced
C = Number of Farmers

Diperoleh rule sebagai berikut:

1. If the harvest area (A) is narrow, then the decision is of no potential or lack of potential
2. If the harvest is moderate (A), then the decision is of no potential or lack of potential
3. If the harvest is large (A), then its decision is of little potential or potential
4. If production (B) is small, the decision is neither potentially or lacking
5. If production (B) is moderate, then its decision is less potential
6. If production (B) is large, then the decision is lacking potential or potential
7. If the harvest area (A) is narrow and production number (B) is small, then the decision is neither potentially nor lacking
8. If the harvest area (A) is moderate and production number (B) is small, then the decision is not potential
9. If the harvest area (A) is moderate and production number (B) is moderate, then its decision is of little potential
10. If the harvest area (A) is moderate and production number (B) is large, then its decision is less potential
11. If the scope of the harvest (A) is large and the amount of production (B) is moderate, then its decision is of little potential
12. If the extent of the harvest (A) and the amount of production (B) is great, then its decision is potentially
13. If the harvest area (A) is narrow and the number of farmers (C) is small, then the decision is not potential

14. If the harvest area (A) is narrow and the number of farmers (C) is moderate, then the decision is out of the question
15. If the harvest area (A) is narrow and the number of farmers (C) is high, then the decision is of little or no potential
16. If the harvest area (A) is moderate and the number of farmers (C) is small, then the decision is less likely
17. If the harvest is moderate and the number of farmers (C) is moderate, then the decision is of no potential or lack of potential
18. If the crop is large (A) and the number of farmers (C) is small, then its decision is potentially
19. If the harvest is large (A) and the number of farmers (C) is moderate, then its decision is potentially
20. If the harvest is large (A) and the number of farmers (C) is great, then its decision is less likely
21. If production (B) is small and farmers (C) few, then the decision is not potential
22. If production (B) is small and farmers (C) are moderate, then the decision is not potential
23. If production (B) is small and farmers (C) high, it is decided to have little or no potential
24. If production (B) is moderate and farmers (C) is small, then the decision is less potential
25. f the amount of production (B) is moderate and the number of farmers (C) is moderate, the impact is low
26. If production (B) is moderate and farmers (C) is high, then the decision is low in potential
27. If production (B) is large and farmers (C) few, then the decision is potential
28. If the amount of production (B) is high and the number of farmers (C) is moderate, then the decision is to lack the potential or the potential
29. If the harvest was narrow (A), production (B) was small and farmers (C) few, it would not have been a promising one
30. If the harvest is narrow (A), production (B) is small and farmers (C) moderate, then the decision is not potential
31. If the harvest is narrow (A), the production (B) is small and the number of farmers (C) is much, then the decision is neither potentially nor lacking
32. If the harvest is moderate (A), the amount of production (B) is small and the number of farmers (C) is moderate, so the decision is not potential
33. If the harvest is moderate (A), the amount of production (B) and the number of farmers (C) is small, then the decision is less likely
34. If the harvest is moderate (A), the amount of production (B) and the number of farmers (C) is moderate, then the decision is less likely
35. If the harvest is moderate (A), the amount of production (B) is high and the number of farmers (C) is low, hence the decision has little potential
36. If the harvest is large (A) large, the amount of production (B) and the number of farmers (C) is high, then the decision is less likely
37. If the harvest is big (A), the production amount (B) is large and the number of farmers (C) is small, then the decision is potential
38. If the harvest is broad (A), the production number (B) is large and the number of farmers (C) is moderate, then the decision is potential

Got 38 of the rules of table decision system with analytic calculations were then done testing data with Rosetta's software. Here are the rules of vang shaped like the pictures below:



	Rule
1	Jumlah Produksi(sedikit) AND Jumlah Petani(sedang) => Keputusan(tidak berpotensi)
2	Jumlah Produksi(sedikit) AND Jumlah Petani(banyak) => Keputusan(tidak berpotensi) OR Keputusan(kurang berpotensi)
3	Jumlah Produksi(sedang) AND Jumlah Petani(sedang) => Keputusan(kurang berpotensi)
4	Jumlah Produksi(sedang) AND Jumlah Petani(banyak) => Keputusan(kurang berpotensi)
5	Jumlah Produksi(banyak) AND Jumlah Petani(sedikit) => Keputusan(berpotensi)
6	Jumlah Produksi(banyak) AND Jumlah Petani(sedang) => Keputusan(berpotensi) OR Keputusan(kurang berpotensi)
7	Jumlah Produksi(sedikit) AND Jumlah Petani(sedikit) => Keputusan(tidak berpotensi)
8	Jumlah Produksi(sedang) AND Jumlah Petani(sedikit) => Keputusan(kurang berpotensi)
9	Luas Panen(sedang) AND Jumlah Petani(sedang) => Keputusan(tidak berpotensi) OR Keputusan(kurang berpotensi)
10	Luas Panen(sempit) AND Jumlah Petani(banyak) => Keputusan(tidak berpotensi) OR Keputusan(kurang berpotensi)
11	Luas Panen(luas) AND Jumlah Petani(banyak) => Keputusan(kurang berpotensi)
12	Luas Panen(luas) AND Jumlah Petani(sedikit) => Keputusan(berpotensi)
13	Luas Panen(luas) AND Jumlah Petani(sedang) => Keputusan(berpotensi)
14	Luas Panen(sempit) AND Jumlah Petani(sedikit) => Keputusan(tidak berpotensi)
15	Luas Panen(sempit) AND Jumlah Petani(sedang) => Keputusan(tidak berpotensi)
16	Luas Panen(sedang) AND Jumlah Petani(sedikit) => Keputusan(kurang berpotensi)
17	Luas Panen(sedang) AND Jumlah Produksi(sedikit) AND Jumlah Petani(sedang) => Keputusan(tidak berpotensi)
18	Luas Panen(sempit) AND Jumlah Produksi(sedikit) AND Jumlah Petani(banyak) => Keputusan(tidak berpotensi) OR Keputusan(kurang berpot
19	Luas Panen(sedang) AND Jumlah Produksi(sedang) AND Jumlah Petani(sedang) => Keputusan(kurang berpotensi)
20	Luas Panen(luas) AND Jumlah Produksi(sedang) AND Jumlah Petani(banyak) => Keputusan(kurang berpotensi)
21	Luas Panen(luas) AND Jumlah Produksi(banyak) AND Jumlah Petani(sedikit) => Keputusan(berpotensi)
22	Luas Panen(luas) AND Jumlah Produksi(banyak) AND Jumlah Petani(sedang) => Keputusan(berpotensi)
23	Luas Panen(sedang) AND Jumlah Produksi(banyak) AND Jumlah Petani(sedang) => Keputusan(kurang berpotensi)
24	Luas Panen(sempit) AND Jumlah Produksi(sedikit) AND Jumlah Petani(sedikit) => Keputusan(tidak berpotensi)
25	Luas Panen(sempit) AND Jumlah Produksi(sedikit) AND Jumlah Petani(sedang) => Keputusan(tidak berpotensi)
26	Luas Panen(sedang) AND Jumlah Produksi(sedang) AND Jumlah Petani(sedikit) => Keputusan(kurang berpotensi)
27	Luas Panen(sedang) AND Jumlah Produksi(sedikit) => Keputusan(tidak berpotensi)
28	Luas Panen(sempit) AND Jumlah Produksi(sedikit) => Keputusan(tidak berpotensi) OR Keputusan(kurang berpotensi)
29	Luas Panen(sedang) AND Jumlah Produksi(sedang) => Keputusan(kurang berpotensi)
30	Luas Panen(luas) AND Jumlah Produksi(sedang) => Keputusan(kurang berpotensi)
31	Luas Panen(luas) AND Jumlah Produksi(banyak) => Keputusan(berpotensi)
32	Luas Panen(sedang) AND Jumlah Produksi(banyak) => Keputusan(kurang berpotensi)
33	Jumlah Produksi(sedikit) => Keputusan(tidak berpotensi) OR Keputusan(kurang berpotensi)
34	Jumlah Produksi(sedang) => Keputusan(kurang berpotensi)
35	Jumlah Produksi(banyak) => Keputusan(berpotensi) OR Keputusan(kurang berpotensi)
36	Luas Panen(sedang) => Keputusan(tidak berpotensi) OR Keputusan(kurang berpotensi)
37	Luas Panen(sempit) => Keputusan(tidak berpotensi) OR Keputusan(kurang berpotensi)
38	Luas Panen(luas) => Keputusan(kurang berpotensi) OR Keputusan(berpotensi)

Picture 2 Rule Testing Rosetta's Software

4. CONCLUSIONS

The research, selecting a rough set predictive method to determine rule of potential paddy commodities in Blitar's district use of the full range of harvest conditions, production number, and farmers. The variable selection (attribute of conditions and decision attributes) used profoundly affects the rules generated. The rules of the new information will guide us in determining the region's potential paddy commodity in blitar district based on the three attributes of decision: potential, low potential, and not potential. As a research obtained 38 rules for determining the region's potential paddy commodity Blitar district with rules for the region that could potentially have a large crop, a large amount of paddy produced, and a small number of farmers. The results of the analytic research were tested using Rosetta's software. Gained rule number the same and general rule resulting from the reduction process is 38 rule.

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